



ASEA REPORTS

Asbestos: Lethal and Still a
Threat?

Yes
No

Head Start to Safety - Asbestos Awareness Training, High School Students and the Building Industry

DRAFT REPORT



As prepared by the Asbestos Diseases Society of South Australia

Asbestos Diseases Society of South Australia inc.

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List of Acronyms

AAT	Asbestos Awareness Training
ADSSA	Asbestos Diseases Society of South Australia
ACM	Asbestos Contaminated Materials
ASEA	Asbestos Safety and Eradication Agency
CITB	Construction and Industry Training Board
D2C	Doors2Construction
PPE	Personal Protective Equipment

1. Executive Summary

1.1 Research Objectives

Exposure to airborne asbestos fibres remains a serious health risk throughout Australia, both in occupational and domestic settings. The elevated incidence of asbestos-related disease in the building and construction industry is of particular concern.

The Asbestos Diseases Society of South Australia (ADSSA) has many years' experience in providing asbestos awareness training (AAT) for at risk groups in the community. AAT for high school students considering employment in the building and construction industry is an ongoing priority. Key issues covered in the workshops include the dangers of working with asbestos and the importance of ensuring that safe systems of work are in place.

The ADSSA training program is provided free of charge to both students and their schools. Funding for the training has largely been obtained through annual grants from two supportive state government agencies.

As part of its research agenda, the Asbestos Safety and Eradication Agency (ASEA) commissioned ADSSA to engage a researcher to undertake research to assess the effectiveness of AAT.

The aims of the research were to investigate whether AAT provided to year 10 and 11 high school students has:

- Increased their awareness of asbestos and asbestos contaminated materials (ACM)
- Assisted students to identify probable ACM
- Enhanced their understanding of the health risks associated with asbestos exposure, and
- Improved their knowledge of health and safety measures to prevent exposure to asbestos in the workplace.
- Findings from the research have also identified:
 - Strengths and limitations of the current AAT program
 - Directions for further research
 - Implications for AAT in other Australian states and territories.

1.2 Methodology

A three-part methodology was used to assess asbestos awareness among 487 year 10 and 11 students contemplating future employment in the building and construction industry. The students were drawn from 21 South Australian metropolitan and country high schools.

The first approach was a quantitative questionnaire comprised mainly of multiple choice questions that explored their views on a range of key asbestos-related issues, both before ([Appendix A](#)) and after ([Appendix B](#)) their AAT workshops. The underlying aim was to establish baseline data for each student's response on each asbestos issue, and any subsequent changes in responses after their training.

The second, qualitative, stage involved a commissioned researcher, with extensive teaching and asbestos experience, conducting one-on-one phone interviews with 20 students who had completed their workshop training ([Appendix C](#)). The format for this questionnaire was 6 asbestos-related themes that were canvassed during their workshops. These interviews were undertaken to solicit a more in-depth appreciation of the students' understanding of key asbestos issues.

The third component centred on the class observations by the researcher of participants' general level of understanding of asbestos issues, during attendance at 13 asbestos awareness training workshops.

The potential value of this multi-level approach is that it enabled comparisons of findings between the three separate stages to be undertaken. It assisted in identifying potential inconsistencies in students' responses on specific issues as well as responses which reinforced earlier findings.

1.3 Findings

Quantitative research

Responses by 487 South Australian high school students from a multiple-choice based questionnaire indicated most had a very limited understanding of asbestos-related issues prior to their awareness training workshop sessions.

Follow-up questionnaire responses immediately after their training revealed a substantial increase in general awareness of asbestos issues.

Students also indicated they had a better practical understanding of specific work related asbestos issues. This included how to identify and locate probable asbestos contaminated products in the workplace. Likewise, many thought they were better equipped to persuade employers to correct unsafe work practices involving asbestos.

Qualitative research

Findings from the telephone surveys conducted with 20 students, following their initial training, also suggested improvements in asbestos awareness. These findings reinforced or complemented those obtained from the quantitative research.

Students reported a stronger understanding of the linkage between asbestos exposure and adverse health effects, such as mesothelioma. An increasing recognition of where to find asbestos products was another example of their development. This was complemented by their appreciation of the importance of asbestos registers, not only as a means of locating asbestos products but also details of the type of asbestos and its condition.

Student responses also highlighted the important role of employers in providing asbestos training, PPE and effective management of asbestos hazards.

Class observations

The 13 class observations by the researcher reinforced the findings from the quantitative and qualitative surveys. The observations showed that the asbestos workshops improved both the students' general awareness and their understanding of a range of real-world asbestos issues likely to be encountered in their prospective workplaces. There was also scope for an increased emphasis on the importance of asbestos registers and employer responsibilities for asbestos safety.

Overall, the workshops provided the students with a training foundation for more comprehensive asbestos safety training in the future.

2. Background

The Asbestos Disease Society of South Australia is a not-for-profit organisation established in 2005. ADSSA provides a broad range of services including:

- Support for asbestos victims and their families
- Delivery of high quality asbestos awareness training for 'at risk groups' in SA
- Advocacy for regulatory reform, including legislative change, on asbestos-related issues and
- Promotion of community understanding of asbestos-related diseases and their prevention.

The membership of ADSSA is acutely conscious of the need to wind back Australia's extensive burden of asbestos-related disease and mortality.

Asbestos-related diseases (ARD) are slow onset illnesses directly linked to past asbestos exposure. Onset periods typically range from 20-50 years. Asbestos diseases include:

- Mesothelioma
- Asbestosis
- Lung Cancer
- Laryngeal Cancer
- Ovarian Cancer
- Pleural Plaques.

During the post-war era, Australia became one of the world's largest per capita users of asbestos. Consequently, it now has one of the world's highest rates of ARD. By 2020 it is conservatively estimated that 40,000 Australians will have died from exposure to asbestos.¹

In response to the escalating death toll from ARD the Australian government enacted a comprehensive nation-wide asbestos ban came into effect on 31 December 2003.

There remains, however, a very substantial asbestos 'legacy' as much of Australia's pre-2003 asbestos stock is still in place in hundreds of thousands of workplaces and homes. This legacy burden will persist well into the 21st century. Illegal asbestos imports from China, and other nations that continue to produce and export ACM, add to this burden.

Although asbestos has more than 3,000 applications, the main legacy components include *asbestos 'fibro' cement* sheeting, water pipes, flooring materials, friction items and roofing products. The best available estimate of Australia's asbestos legacy is that there was 5.6 million tonnes of ACM in situ in 2016.²

¹ T. Driscoll (2017), *Monitoring and Measuring Asbestos-Related Disease and Exposure – Questions, Answers, Actions*, Presentation at the ASEA Asbestos Summit, Canberra, 27 November, 2017.

² S. Donovan and J. Pickin (2016), *An Australian Stocks and Flows Model for Asbestos*, *Waste Management & Research*, 34:10-1080-81.

The vast extent of this legacy has created a pressing nation-wide need for a threefold policy response to minimise future asbestos-related fatalities.

The first requires a comprehensive risk-based program of phased asbestos removal. The second entails effective management of a very substantial asbestos stock that will continue to be a feature of Australia's built environment well into the future. The third necessitates a concentrated and coordinated approach to prevent illegal asbestos imports. The extent to which these policies are implemented will have a crucial bearing on future asbestos-related deaths in Australia.

One important feature of an asbestos management strategy is a greater emphasis on AAT, both for high risk groups and the broader community.

AAT is especially relevant for young people such as school students and apprentices considering employment in the building and construction industry. The industry has a comparatively high risk profile and exposure to asbestos and products containing asbestos is a common occurrence. ASEA's National Asbestos Exposure Register shows that just over 20% of potential exposures in the workplace related to the building and construction industry, almost 17% to the electrical trade and 4.75% to plumbing.³

The AAT workshops conducted for this research involved year 10 and 11 high school students enrolled in the *Doors2Construction* (D2C) program. D2C training operates under the auspices of the government backed South Australian Construction Industry Training Board (CITB).

The D2C program commenced in 2010 and provides a broad introduction to skills required in the industry, 3 week work placements and a pathway for skills development designed to assist participating students in securing employment in the industry. In 2017, there were 710 D2C students.

AAT workshops for D2C students are conducted by ADSSA instructors who have a training background and extensive experience with asbestos-related issues. Instructors encourage students to raise questions during the course of workshops. Including set-up time, the workshops are generally of 2 hours duration.

Issues canvassed in the workshops include the risks posed by asbestos exposure, identification of ACM, asbestos risk assessment practices by employers and the importance of health and safety measures associated with working with asbestos. A video that outlines the medical links between asbestos exposure and cancers such as mesothelioma also forms part of the presentation.

The overarching aim of the workshops is the prevention of asbestos disease by equipping students with the basic knowledge and skills that will enable them to avoid exposure to airborne asbestos fibres in the working environment.

³ *Asbestos Safety and Eradication Agency Annual Report 2016-17*, 104.

3. Methodology and Findings

3.1 Quantitative Findings

Research for this component of the project was drawn from 487 year 10 and 11 high school students who attended AAT workshops conducted in 21 South Australian high schools during the period from July 2016 to September 2017.

The majority of students, 62%, attended Adelaide metropolitan schools while 38% were from country schools in South Australia. Female students accounted for only 3% of the total intake. This very limited representation reflects the continuing male dominated occupational nature of the building and construction industry.

On a state-wide basis, the five most popular trades considered by the students accounted for 79% of the total. In order of interest they were:

- Carpentry (35.9%)
- Plumbing (19.1%)
- Mixed Trades (10.3%)
- Building Construction (8.0%)
- Electrical (5.7%).

While the metropolitan profile mirrored that of the state-wide breakdown there were some significant differences in the country profile, a finding that may reflect differences between metropolitan and country labour market requirements.

The five main trades of interest in the country areas were:

- Carpentry (30.3%)
- Building Construction (13.5%)
- Mixed Trades (12.4%)
- Electrical (9.7%)
- Plumbing (8.6%).

The quantitative component of the research undertaken for the project canvassed a range of issues through predominantly multiple-choice questions, supplemented by a general knowledge question and two others which sought responses in identifying ACM and where they might be located.

These issues were examined through a 'before and after' methodology. The underlying purpose was to identify any changes in the awareness of students on asbestos issues after they had completed their workshop training.

Pre-Awareness Training Findings

Baseline responses from the students prior to the training workshops included the following:

- The vast majority of students, 94%, had heard of asbestos prior to their training.
- But 96.9% indicated they had no, or little, understanding of asbestos issues.

- 5.6% thought that asbestos containing materials were no longer produced, 36.3% indicated they were unlikely to come across asbestos while 58.1% reported they could come into contact with asbestos in many different situations.
- An overwhelming 96.5% of students indicated they needed to learn where they might find asbestos and the appropriate safety precautions that needed to be taken.
- 59% of students reported that they were not confident they could identify asbestos containing materials, 40.7% that they could in certain circumstances and a mere 0.3% that they could readily identify asbestos.
- Not dissimilarly, only 3.5% indicated they had a good understanding of where asbestos containing materials could be found, with 58.1% having some idea and 38.4% not at all confident.
- When queried on how many asbestos containing materials exist only 28.8% of students responded that there were more than 500 materials containing asbestos, 16.9% thought there were fewer than 50 and another 27.6% believed there were between 51 and 100.

In addition, students were asked to specify which of 12 listed products they thought contained asbestos. There were a total of 2,975 responses. The top six products identified, were:

- Installation in walls and roof spaces (408)
- Brick cladding on older homes (367)
- Roof tiles (342)
- House eaves (302)
- Acoustics and other ceiling tiles (291)
- Floor tiles (221).

Responses were also sought on their views regarding locations where a tradesperson might expect to find products containing asbestos. Of the 2,549 responses, the six main locations specified were:

- Roof cavities (417)
- Commercial or domestic kitchens (325)
- Bathrooms (295)
- Lounge rooms (225)
- Garden sheds (219)
- Lino carpeted floors (215).

Post-Awareness Training Findings

Responses from students after they had completed their awareness training indicated that:

- A total of 79.1% were 'well', or 'very well', informed in relation to 'asbestos containing materials and their risks' as opposed to 28.3% prior to their training.

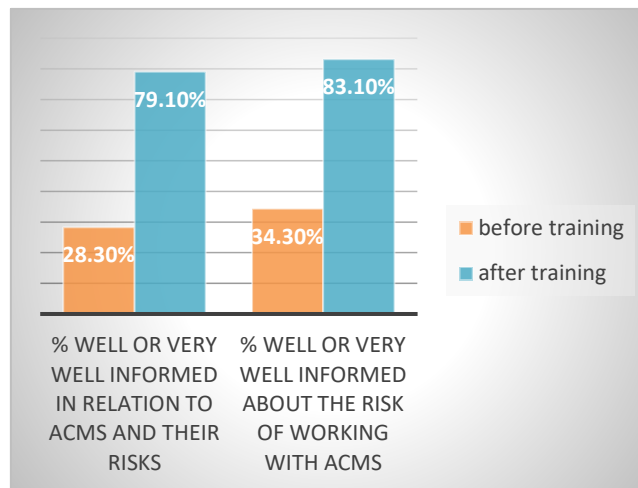
- Similarly, 83.1% reported they were ‘well’, or ‘very well’, informed about ‘the risks of working with asbestos containing materials’ compared to 34.3% before being trained. (See Chart below).
- When asked ‘how confident’ they were they that they could ‘answer questions about asbestos containing materials and their risks’ 48.3% reported that they could answer ‘a lot’ (defined as more than 50%) or ‘almost all’. However, the majority, 51% replied that, at best, they could only answer ‘a small number’ (fewer than 50%) of questions on this issue.
- In addition, 63.1% stated they were ‘confident’ or ‘very confident’ that they could ‘persuade their employer to change unsafe work practices.’
- 76.4% correctly answered that there were more than 500 materials containing asbestos in existence while 4.7% thought there were fewer than 50 while a further 13% believed there were between 51 and 100.

The post training responses, of students on the identification of asbestos products and where they might be located, were substantially higher compared to the pre-training findings.

Responses regarding the identification of 12 common asbestos products also increased substantially, from 2,975 to 5,050, an increase of 69.7%. This was complemented by the 4,508 responses concerning the location of 12 common asbestos products, an increase of 76.9% from the pre-training level of 2,549.

It should also be noted there were changes in responses regarding the composition of the top 6 responses. Students’ post-training replies placed a greater emphasis on electrical switchboards and bathrooms. The shift in responses vaulted these two items from outside the top 6 into the top 4 for asbestos identification and location, a result consistent with student learning from the workshop training.

Chart: How well informed about asbestos and its risks were students before and after training



Metropolitan v Country Responses

One other relevant aspect of the survey data is that it enables comparisons between responses by metropolitan and country students to be made.

In the case of the pre-training questionnaire, the responses generally differed by no more than two percentage points. By way of illustration 91.5% of rural students, and 93.4% of metropolitan students, reported they had heard of asbestos prior to their training. Similarly, 97.7% of metropolitan students and 96.1% of their rural counterparts indicated they had little or no understanding of asbestos issues.

There were, however, two exceptions. In the first, 98.7% of metropolitan versus 93.0% of rural students thought the risks from exposure to asbestos made it essential for them to understand where asbestos products could be found along with the corresponding safety measures that needed to be put in place. The second issue referred to whether students had a 'very good' understanding of where asbestos products could be found. 6.5% of rural students indicated they did, compared to 1.7% of metropolitan based students.

Differential responses from metropolitan and country students were also a feature of the post-training responses. This was especially evident with the self-perceived ability of students to adequately explain questions on asbestos issues, or convince their employer to rectify unsafe working conditions.

Whereas 51% of metropolitan students thought they could effectively respond to most questions about asbestos containing materials, only 43.8% of country students thought they could. The difference between the two groups on the employer issue was even larger. A total of 69.2% of metropolitan students believed that they could influence their employer to take appropriate measures to remedy unsafe work practices involving asbestos, as opposed to 52.9% of country students.

It is not clear what factors underpin these apparent discrepancies in city/country responses. But they do warrant closer consideration that could be explored further in future workshops.

Summary Assessment

Prior to their training workshops, nearly all students recognised there were potentially serious risks associated with work involving exposure to asbestos. Most were also aware, in general terms, of some products containing asbestos.

It was also apparent, however, that the overwhelming majority of the 487 participating students had a very limited conceptual and practical appreciation of asbestos issues likely to be encountered in their prospective workplaces.

This was particularly evident in relation to a lack of self-assurance concerning their ability to identify materials containing asbestos or detect locations where ACM might be found. More generally, it was acknowledged they had little or no understanding of asbestos issues likely to be encountered in the workplace.

Following their awareness training it was apparent that most students had a significantly better knowledge of asbestos and asbestos products. This was accompanied by a greater awareness of the risks associated with working with asbestos and an increased capacity when it came to identifying and locating likely asbestos contaminated products. They were also more optimistic in their ability to persuade employers to take action to remedy hazardous work involving asbestos.

3.2 Qualitative Findings

A qualitative survey was conducted by telephone interviews with 20 students who had earlier undertaken AAT workshops and completed the quantitative questionnaire. This cohort was comprised of 14 male and 6 female students drawn from both metropolitan and country schools. All of the students confirmed they intended to work in the building and construction industry – 10 as carpenters, 6 as plumbers and 4 as electricians.

The phone survey covered 12 questions designed to elicit more in-depth responses from each student on a range of asbestos-related issues. These questions were based on the following research themes:

- Asbestos information resources
- Health aspects
- Hazard awareness
- Asbestos registers
- Employer obligations
- Asbestos awareness.

Asbestos Information Resources

When questioned on where more information on asbestos might be found, students overwhelmingly viewed the Internet as the primary source of publications and guidance materials on asbestos issues.

Several students also indicated they would seek information from their employers, colleagues and regulatory agencies such as SafeWork SA. Others raised the point that more publications on asbestos need to be made available in school resource centres.

Their responses suggest that the asbestos awareness workshops have given students new options and greater confidence in their ability to access information on a wide range of asbestos topics.

It should also be helpful once they commence employment. Although not a guarantee, better informed workers are more likely to be aware of the need for safe work practices than would otherwise be the case.

Health Aspects

Coverage of the relationship between asbestos exposure and ARD is an integral component of AAT workshops. Particular emphasis is placed on the slow on-set, and the dose related, nature of these diseases.

In responding to the question of which part of the body was most affected by exposure to airborne asbestos, all of the students identified the lung as the main site of ARD.

The inclusion of an 8 minute video presentation was an excellent teaching aid that assisted their comprehension of asbestos disease. Visualising the functioning of the lungs and how microscopic asbestos fibres can damage both lungs and the lining of the lungs provided students with a clearer understanding of the asbestos disease process.

This aspect of the training also reinforces the emphasis placed on safety measures to asbestos-related diseases, particularly mesothelioma.

Hazard Awareness

Responses from students on two questions concerning this topic were sought. One focused on a specific issue while the other was more broadly based.

The first question sought student views on what they would look for when 'working with old cement sheeting'.

A small number, 10%, said they were 'not sure'. Others were more confident, citing whether the sheeting was brittle or broken, or if the underside had a 'dimple-like' texture. The most comprehensive response came from a student, Chris, who included all of these factors.

The second involved the issue of where they might 'find asbestos products' during the course of work.

All of the students were able to provide five or more examples of where asbestos products could be located. In the main, these responses were generated from the listed products discussed during the course of their workshop training.

The most common illustrations provided by the students were:

- Roof tiles
- Gables and eave linings on houses
- Electrical switchboards
- Wall cladding, especially in bathrooms and laundering areas
- Guttering.

The responses from the students were largely confined to products found in domestic premises. In view of their lack of industrial experience this is to be expected.

Nevertheless, these findings indicate that most of the students have an increasing appreciation of these aspects of asbestos hazard awareness.

Asbestos Registers

Three questions were raised to explore the students understanding of asbestos registers:

- Why are they important?
- What information do they contain?
- How would you use a register in your job?

In response to the first question, 10% of students said they were 'not sure' why registers are important. The remaining 90%, however, understood that asbestos registers are a workplace health and safety obligation that requires employers, building owners and other duty holders, to make information available where a workplace contains asbestos products.

Responses on what information should be included in asbestos registers were also varied. Some 10% of students provided generic responses confined to statements such as 'Tells you what has asbestos in it'.

Apart from asbestos location details, most responses also included references to the type of the asbestos involved and its condition. A further 20% also referred to management plans that may be included in registers.

The student responses to the third question largely reflect their answers to the previous two questions. Most students indicated that access to an asbestos register enables them to identify the location and condition of asbestos materials.

This in turn was seen as fundamental to ensuring safety precautions are taken so that neither they nor other workers are exposed to airborne asbestos. As one student, Luke, put it, 'Before I start work I would make sure no asbestos will be disturbed --- and let others around me know the task.'

Before they commenced their awareness training very few, if any, students would have had any familiarity with the 'asbestos register' concept, let alone its practical application. From the responses they provided during the telephone survey, it is clear most, though certainly not all, students now have a reasonable grasp of both the concept and its applications.

Employer Work Health and Safety Obligations

The first component covered by this part of the survey focused on who in the workplace was responsible for the provision of asbestos training and personal protective equipment (PPE), and why.

The unequivocal response from 90% of students was that employers would be responsible for both the provision of PPE and asbestos training. Of the other two students, one said the 'asbestos people' would provide the training, while the other referred to TAFE as the provider of asbestos training (though possibly on behalf of the employer).

More concerning was that a majority of students did not offer any responses as to 'why' employers were required to undertake these responsibilities.

At first glance, this would seem to suggest that they simply did not understand the linkages between these employer responsibilities and safe working practices. In view of the emphasis placed on the legal obligations of employers to their workers, during the training sessions, this seems rather unlikely.

Given that this question was tacked on at the end of the preceding question it may simply have been overlooked by many students. Others may have implicitly assumed, correctly, that asbestos training and PPE are necessary safety measures that employers are legally obliged to provide, and left it at that.

In the case of the 45% of students who addressed this issue all of their responses highlighted this linkage. As articulated by one student, the employer 'would provide the necessary PPE which includes a P2 mask, safety glasses and clothes which could be disposable. The employer would also have to provide the necessary training to work safely'.

The second component sought answers from students on what they would do if they 'come across an asbestos hazard' in their workplace.

The dominant responses were 'stop work and notify the employer' and 'stop work'. These two categories accounted for 55% of total responses. A further 30% reported their initial response would be to notify the employer.

Several of the better informed students also referred to the importance of having suspected ACM tested prior to the commencement or recommencement of work.

A common view, summarised by James, was if workers came across a suspected ACM in the workplace, they should 'Stop the work, notify the boss and have the material tested. If (it is) not asbestos start work again.'

Another student, Kate, raised the question of what should be done in the event an employer does not respond appropriately when notified of an asbestos hazard. As young workers generally have very limited bargaining power relative to that of their employer, this can become a serious issue.

Most employers strive to comply with their work health and safety obligations; however, some do not. In these circumstances, Kate's response was that 'If (there is) no action by the employer take the matter further'. WHS regulators and unions are often able to assist in resolving problems of this nature.

Asbestos Awareness

Two related questions were used to explore the views of students on their asbestos awareness training.

First, they were asked to indicate what issues came to mind when they heard the word 'asbestos'. Some students provided single answers while others furnished multiple replies.

This resulted in a total of 31 responses that focused on four key asbestos issues:

- Identification/Location of ACM
- Health effects caused by exposure to airborne asbestos particles
- Risk recognition of the dangers of working with ACM
- Safety concerns.

These results are broadly aligned with the training emphasis they received during the course of their workshop training sessions.

The second question sought feedback on how students would 'apply' what they had learnt from their awareness training. A total of 20 responses were provided by the students, with 70% submitting two or more replies.

As with the previous question, the responses they provided also centred on the four key asbestos issues. ACM identification/location and safety concerns each attracted nine responses, whereas risk recognition and safety concerns both received five responses.

Comments from the students were varied. Some students confined their comments to general statements such as 'The information received was very good. It gave me a better understanding of the product'. Most though provided more concrete responses.

Jake, for example, replied that as a result of his training he would now take into account whether asbestos products were present before he commenced 'renovating a building.' Another student, Sophie, said she was now able to 'help others to understand the product and, of course, assist in helping ensure the asbestos products are removed safely'. A third student, Tom, also referred to the importance of safety issues, and the training which has equipped him on 'how to identify (asbestos) and where it may be installed'.

Summary Assessment

The telephone survey built on six broad topics canvassed in the initial AAT workshops. The findings reinforce or complement the main findings which emerged from the quantitative survey.

Participating students expressed confidence in their ability to access a range of asbestos information sources. A better understanding of health effects associated with exposure to asbestos further underlined the importance placed by students on safe working provisions to prevent potentially lethal asbestos diseases. Similar comments apply to their perception of the value of asbestos training, hazard awareness, the use of PPE and the role of asbestos registers in facilitating safe systems of work.

3.3. Class Observations

The class observations were undertaken by the researcher as an additional means of assessing the students' understanding of key asbestos issues covered by their training. He sat in on 13 workshop presentations. 8 were conducted for students from metropolitan schools and 5 from their country counterparts.

From the researcher's observations engagement by the students was both widespread and constructive. The majority expressed an interest in learning about asbestos issues, were attentive during presentations and seemed to enjoy their workshop sessions.

Most provided good feedback, thought the training was valuable and were keen to have more training on how to manage asbestos.

Participation by peer group leaders in raising issues was very helpful as it generally encouraged the rest of the class to get involved. Once a question was raised with the trainer on a specific issue it often emboldened other students to ask further questions on the topic.

In all the workshops observed by the researcher, there was also student to student interaction on asbestos issues. This was encouraged by the trainer and often raised additional issues of relevance. It also appeared to give students a sense of 'ownership' of their training.

The topics which attracted the most interest from students were:

- Potential health effects of exposure to asbestos
- Identification/location of ACM
- Role and responsibilities of employers
- Asbestos registers.

In relation to health effects, the 8 minute video illustrating the medical consequences of microscopic asbestos fibres penetrating lung tissue was an eye opener for most of the students. It visualised the linkages between exposure to asbestos particles and the potentially lethal consequences decades later, such as mesothelioma.

This awareness that they could be killed by asbestos also reinforced the overarching necessity for safe systems of work when dealing with asbestos in the workplace.

Visualisation was also an incredibly effective means of raising student awareness when discussing the likely identification of ACM and where they might be found. Slides of ACM in both industrial and domestic settings were shown to students as an integral component of their workshop training. Samples of materials similar to asbestos handed out during the workshops were also very well received. It gave students a better appreciation of what they could expect to come across in the workplace and what to do when they did.

This combination of visualisation and a hands-on approach had a catalytic effect in encouraging students to ask – and sometimes answer - questions on safety issues needed to ensure their safety on the job.

The pivotal role of employers in facilitating health and safety not surprisingly attracted substantial interest from students. A common issue frequently mentioned in workshops concerned what safety measures and processes needed to be in place to protect them from being exposed to asbestos fibres.

The ensuing discussions focused on employers' obligation to provide safety equipment, safe work method statements and the use of asbestos registers. Students were particularly interested in the correct use of PPE. Under the guidance of their trainers, students were able to 'test drive' P2 face masks, disposable protective clothing and other safety items. Once again, the visualisation and hands-on approach resonated with students.

Although seemingly more abstract, the increased understanding of PPE also stressed the importance of asbestos registers. Ready access to registers provides details on where ACM can be found and, consequently, where PPE may be required. This is especially significant as work in the building and construction industry is typically undertaken in a wide range of different workplace settings.

Summary Assessment

Based on the 13 class observations, the researcher's assessment was that the workshops improved not only the students' general awareness but also increased their understanding of several specific work-related asbestos issues.

There was certainly a greater appreciation of both the types of ACM and where they might be found. Similarly, there was an increased student awareness of the health effects associated with asbestos exposure. Improvements in their understanding of asbestos hazards, safety measures and the role of employers were also evident. Notwithstanding these improvements, the researcher suggested that further training on asbestos registers as well as employer responsibilities for PPE and other asbestos safety measures would be beneficial.

It was also apparent that students were engaged with their workshop presentations. There was considerable participation by students in raising asbestos issues with the trainer. Student to student interactions in broaching and discussing issues of concern were also encouraged. Most thought the training was valuable, provided useful feedback and the students were keen to learn more.

4. Limitations

Notwithstanding the positive research findings in support of the AAT workshops, there are a number of qualifications that also need to be taken into account.

The most obvious is that the training workshops were one-off sessions usually of no more than 2 hours. While this was sufficient to cover the headline topics, it placed restraints on the depth to which these issues could be investigated.

Students' lack of experience of working in the building industry also needs to be taken into account, as there is a substantial power imbalance between workers and employers. As a consequence, student survey responses relating to employer safety obligations may not always correspond with how they would actually behave in a real-world situation. This scenario is most likely to be played out in workplaces with a poor safety management culture. In recognising this problem, workshop trainers strive to provide students with not only the knowledge but also the confidence to raise asbestos problems with supervisors and employers on issues involving asbestos safety.

Another important consideration was the disparity in the extent of awareness and understanding within the student cohort at the completion of their training. A number of responses from the qualitative research indicated that 10% of the students may not have had an adequate understanding of particular issues. One example was a lack of awareness as to why asbestos registers are an important safety tool. Not being sure of how to work with old asbestos cement sheeting was another.

A further qualification concerns the findings from the qualitative survey based on responses provided by the 20 students who participated in the survey. The students were selected on their willingness to participate rather than on a statistically random basis. Consequently, it is not entirely clear whether their responses are representative of the rest of the student cohort.

Not dissimilarly, a degree of caution applies to the findings made by the independent researcher. A different assessor with comparable qualifications and experience may have reached different conclusions on one or more issues.

5. Conclusions

At the commencement of their awareness training, it was clear that the vast majority of students were ill equipped to handle the potentially lethal risks posed by work with asbestos. This was illustrated by the responses they provided through the quantitative questionnaire prior to their workshops:

- 97% reported they had no, or little, understanding of asbestos issues
- Only 29% thought there were over 500 products containing asbestos
- There was a limited ability in identifying 12 common products containing asbestos
- There was also a limited understanding of the likely locations of 12 common asbestos products
- 97% thought they needed to learn more about safety precautions when working with asbestos.

At the completion of their awareness training a quite different picture emerged.

- 79% said they were well/very well informed on asbestos issues
- 76% indicated there were over 500 products containing asbestos
- There was a 70% increase in the recognition of 12 common asbestos products
- There was a 77% improvement in being able to identify the location of 12 common asbestos products
- 63% indicated they could convince their employer to 'change unsafe work practices.'

These findings illustrate the benefits of AAT for high school students who expect to pursue employment in the building industry in the not too distant future. Their training has provided them with a practical understanding of where they can expect to find ACM, the associated health risks and the crucial importance of safe systems of work when dealing with asbestos.

The qualitative findings from the telephone interviews were also supportive of the AAT workshops. Feedback from the participating students indicated most had a better understanding of the:

- Linkages between asbestos exposure, asbestos diseases and the primacy of safety prevention measures
- Identification and location of ACM
- Role of asbestos registers in managing ACM
- Employer provision of, and training in, the safe use of PPE
- General duty of care placed on employers to ensure workers are not exposed to asbestos fibres
- The importance of notifying the employer in the event they come across an asbestos hazard.

As with the findings from the quantitative survey, these findings confirm the benefits of early asbestos training for students considering a future in the building and construction industry.

The researcher's class observations add further weight to the conclusion that the workshops had significantly raised the awareness of students, both in general terms and more practical issues such as the:

- Health effects of exposure to asbestos
- Identification of asbestos hazards
- Importance of employers providing safe working conditions.

The researcher also considered that more detail on a number of hands-on work issues would be of assistance to students. These matters included:

- Factors concerning the selection, use and disposal of PPE
- Employer Safe Work Method Statements
- Practical applications of Asbestos Registers in a diverse range of workplaces.

His overall assessment was that the asbestos awareness workshops were a valuable stepping stone for the participating students. He also noted most students found their training very useful and that they had considerable engagement with their trainers and other students on asbestos issues of concern during the workshop presentations.

The case for asbestos awareness training remains persuasive, notwithstanding the constraints referred to earlier. In addition to the research findings, students overwhelmingly voiced their support for the AAT workshops. Feedback from a random sample of 25 students indicated that at least 84% of the students were supportive of the training program.

In their own words:

- 'The presentation helped me gain a greater knowledge of asbestos'
- 'Very clear messages throughout, very descriptive info and all very relevant'
- 'It has helped a lot and given me a lot more knowledge'
- 'This will help me with identifying and knowing how to safely work with the asbestos'
- 'I understood the topic well as it was explained well'
- 'I now know a lot more about how to safely remove asbestos and where to take it'
- The training 'has taught me how to safely work around asbestos.'

Awareness training for year 10 and 11 high school students considering employment in the relatively high risk asbestos building and construction industry is important. It gives the students a head start to safety.

The knowledge and understanding students acquired from their AAT workshops is only the start of their asbestos training - a first step. But it is a first step that may one day save their life or that of a workmate.

The broader significance of the AAT program is that it provides a foundation for further, more comprehensive, training which builds on their present knowledge and promotes a 'safety first' culture for the management of asbestos in the workplace.

6. Recommendations

It is recommended that:

1. Consideration be given by ADDSA to enhancing its current AAT program with an increased emphasis on:
 - The operational use of Asbestos Registers in a range of different industry settings
 - The selection, use and disposal of PPE
 - Employer Safe Work Method Statements
 - Resolving concerns with employers when encountering asbestos risks in the workplace.
2. It would be beneficial to have nationally harmonised asbestos awareness training programs within vocational education training courses as a means of ensuring integrated, high quality training options for students in high risk occupations and industries.
3. It would be beneficial to make asbestos awareness training programs mandatory for high school students as a means of encouraging safe practices for those entering high risk occupations and industries.
4. It would be beneficial to undertake a 3 to 5 year longitudinal study of trade students to evaluate the effectiveness of asbestos awareness training and to assess behaviour change in the workplace.

7. Appendices – survey tools

[Appendix A](#) - Pre-Asbestos Awareness Training Questionnaire

[Appendix B](#) - Post-Asbestos Awareness Training Questionnaire

[Appendix C](#) - Research Themes and Questions

APPENDIX A

Pre-Asbestos Awareness Training Questionnaire

- Q1. Which trade/s do you intend to take up – are working in; or are interested in?
Please name trade: _____
- Q2. Had you heard of asbestos before becoming aware of this course?
 Yes
 No
- Q3. Which of the following best describes your understanding of asbestos?
 I know a lot about asbestos
 I know a little about asbestos
 I don't know anything about asbestos
- Q4. Which of the following best describes your knowledge of asbestos containing materials?
 They are no longer produced so I won't be working with them
 There is still some around but I'm unlikely to come into contact with any
 I could come into contact with them in lots of different situations
- Q5. Which of the following best describes your understanding of the risks of working with asbestos?
 There is no risk with working with asbestos
 There is only a small risk so I don't need to worry
 I need to ensure I know where I might find asbestos containing materials and the types of precautions I need to take
- Q6. How confident are you that you could identify an asbestos containing material?
 Not at all confident
 I could identify it in certain situations or locations
 I could identify it easily
- Q7. How confident are you that you could identify locations where asbestos containing materials are found?
 Not at all confident
 I have an idea of where some might be found
 I have a very good idea of where they might be found
- Q8. How many materials containing asbestos do you think exist?
 0-10 11-50 51-100 101-500 Over 500

Q9. Which of the listed products do you believe contain asbestos? Please circle items

- 1. _ Roofing Tiles
- 2. _ Floor Tiles
- 3. _ Water Drain Pipes
- 4. _ Brick Cladding on older homes
- 5. _ Car Tyres
- 6. _ Electrical Switch Boards
- 7. _ Bathroom Tiles
- 8. _ Linoleum on Floors
- 9. _ Acoustic & other Ceiling tiles
- 10. _ Insulation in walls & roof spaces
- 11. _ Roof Gutters
- 12. _ House Eaves

Q10. In which of the listed locations do you think a tradesperson in the building and construction industry might find asbestos containing materials? Please circle items

- 1. _ Kitchen of homes or Commercial buildings
- 2. _ Garden Sheds
- 3. _ Roof cavities
- 4. _ Underground drains
- 5. _ Electrical Fuse boxes
- 6. _ Garden Soil
- 7. _ Driveways – asphalt/bitumen
- 8. _ Bathrooms
- 9. _ Gas / Water Meter covers in garden
- 10. _ Lino or carpeted floors
- 11. _ Lounge rooms
- 12. _ Gaskets on machinery

TRAINEE'S NAME : _____

Date of Attendance: ____/ ____ / 201__

C.I.T.B No

Don't know your CITB Number yet? We will look it up if you give us your Date of Birth,/...../.....

As research is being carried out into this Awareness Training, would it be okay for a researcher to contact you to ask you questions Yes/No

If "yes" then please write your mobile number _____

APPENDIX B

Post-Asbestos Awareness Training Questionnaire

Q1 "Prior to the training how informed do you think you were about asbestos containing materials and their risks?"

Not at all informed	Poorly informed	Somewhat informed	Well informed	Very well informed
1	2	3	4	5

Q2 "Prior to the training how informed do you think you were about the risks of working with asbestos containing materials?"

Not at all informed	Poorly informed	Somewhat informed	Well informed	Very well informed
1	2	3	4	5

Q3 "Following the training how informed do you think you are about asbestos containing materials and their risks?"

Not at all informed	Poorly informed	Somewhat informed	Well informed	Very well informed
1	2	3	4	5

Q4 "Following the training how informed do you think you are about the risks of working with asbestos containing materials?"

Not at all informed	Poorly informed	Somewhat informed	Well informed	Very well informed
1	2	3	4	5

Q5 "Following the training how confident are you that you could answer people's questions about asbestos containing materials and their risks?"

I couldn't answer any questions	I could only answer basic questions	I could answer a small number of questions (but less than 50%)	I could answer a lot of questions (more than 50%)	I could answer almost all questions
1	2	3	4	5

Q6 Following the training how confident are you that you could persuade your employer to change unsafe work practices?

Not confident	Only slightly confident	Somewhat confident	Confident	Very confident
1	2	3	4	5

Q7 Following the training how confident are you that you could identify locations where asbestos containing materials are present?

Not confident	Only slightly confident	Somewhat confident	Confident	Very confident
1	2	3	4	5

Q8 "How many materials containing asbestos do you think exist?"
 0-10 11-50 51-100 101-500 Over 500

Q9 "Which of the listed products do you believe contain asbestos?"

1. Roofing tiles
2. Floor tiles
3. Water drain pipes
4. Brick Cladding on older homes
5. Car Tyres
6. Electrical switch boards
7. Bathroom tiles
8. Linoleum on floors
9. Acoustic and other ceiling tiles
10. Insulation in walls and roof spaces
11. Roof Gutters
12. House Eaves

Q10 "In which of the listed locations do you think a tradesperson in the building and construction industry might find asbestos containing materials?"

1. Kitchen of homes or commercial buildings
2. Garden Sheds
3. Roof cavities
4. Underground drains
5. Electrical Fuse boxes
6. Garden soil
7. Driveways - asphalt/bitumen
8. Lino or carpeted floors
9. Lounge rooms
10. Gaskets on Machinery

Please provide comments about how this training has helped you to manage workplace safety in your future employment.

TRAINEES NAME: _____

Date of Attendance: ____/ ____ / 201__

APPENDIX C

Research Themes and Questions

- General Awareness (1, 12)
- Resource Information(2)
- Hazard Awareness (3, 4)
- Asbestos Register (5, 6, 7)
- Employer WHS Obligations(8, 9)
- Health Aspects (10, 11)

1. What sorts of things come to mind when you hear the word asbestos?
2. What would you do if you needed more information on asbestos issues?
3. What would you look for when working with old cement sheeting?
4. In undertaking your work where would you find asbestos products?
5. Why is an Asbestos Register important?
6. What information would you find in an Asbestos Register?
7. How would you use an asbestos register in your job??
8. Who has to provide you with asbestos training and personal protective equipment?
Why?
9. What do you do when you come across an asbestos hazard in your work place?
10. Which organ of the body is most affected by asbestos fibres?
11. What can you do to protect yourself from asbestos diseases?
12. How will you apply what you've learnt from the awareness training in the workplace?